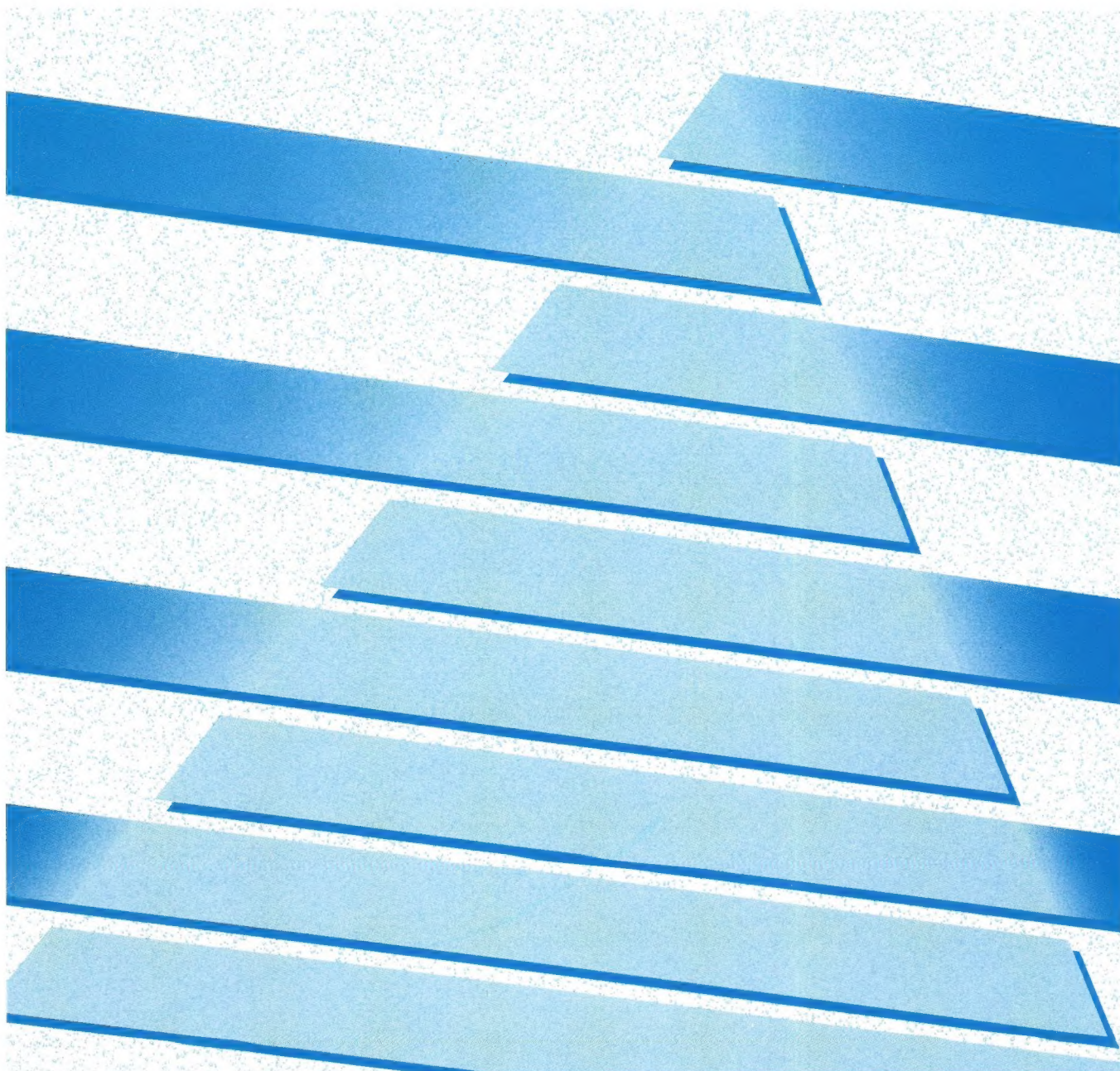




ALLEN-BRADLEY

**ControlView™
Networking**
(Cat. No. 6190-NET)

User Manual



Important User Information

Because of the variety of uses for the products described in this publication, those responsible for the application and use of this control equipment must satisfy themselves that all necessary steps have been taken to assure that each application and use meets all performance and safety requirements, including any applicable laws, regulations, codes and standards.

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ATTENTION: Identifies information about practices or circumstances that can lead to personal injury or death, property damage or economic loss.

Attentions help you:

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- recognize the consequences

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Summary of Changes

Changes from Release 2.0 to 3.0

The following changes have been made to the Networking option and the Networking User Manual since release 2.0:

For information on this new feature:	Refer to:	The feature appeared in:
Installation instructions for the Networking option have been moved to the <i>ControlView Installation Manual</i> .	ControlView Installation Manual	software release 3.0
Networking supports IBM Token Ring local area network hardware	Chapter 2	software release 3.0
Networking supports IBM LAN Support software for use with the IBM Token Ring network	Chapter 2	software release 3.0
Networking supports the INCODE connection utility to link ControlView to IBM Process Operations Management software (POMs)	Preface, Chapter 2	software release 3.0
All remote nodes that communicate with the local node must be defined in the Node Configuration window	Chapter 2	software release 3.0



ControlView™ Networking 3.0

These Release Notes identify, and provide solutions to, situations that may arise when you install and use your software.

Use these Release Notes with the *ControlView Networking User Manual* (Publication Number 6190-6.5.9, November 1992).

Using NetWare ODI

ControlView and the NetWare ODI drivers have conflicting software interrupts. When ODI drivers are installed with ControlView they will prevent ControlView from starting up.

To avoid this problem, include the following line in the AUTOEXEC.BAT file:

```
SET RTX = -MCF
```

Novell Network SHELL.CFG File

If you are using Networking for peer to peer communication, copy the SHELL.CFG file from the ACCESS\SYS directory into the directory from which the network is started up. During start up, NetBIOS will find this file and use it to configure its maximum number of sessions and maximum number of command blocks, displaying the following types of information messages:

```
NETBIOS SESSIONS 22  
NETBIOS COMMANDS 50
```

Upgrading to Networking 3.0

The following steps must be performed before peer-to-peer communication will work.

1. Enter the DCCONFIG command to display the Data Channel Configuration window, then configure the data channels.

2. Enter the NODE command to display the Node Configuration window, then configure the nodes that you wish to communicate with.

An entry must be made for each remote node that the local node will communicate with. You must also configure the local node if it is to have access to itself using peer-to-peer communications.

Saving the Data Channel Configuration

When upgrading from ControlView 2.12. to 3.0, you must quit ControlView immediately after configuring the data channels. Then restart ControlView.



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**WORLD
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Allen-Bradley
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Telex: 43 11 016
FAX: (1) 414 382-4444

**EUROPE/MIDDLE
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Preface

How To Use This Manual

This manual describes the ControlView™ Networking option, which allows a ControlView station to access databases on networked computer nodes and transfer files on a common communications link.

Important: Do not confuse the Local Area Network (LAN), which links computers and printers, with the communication network which connects programmable controllers and ControlView. ControlView does not require the Networking option to communicate with programmable controllers on the communication network, to access file servers or to share network printers on a LAN.

This manual complements the information in the *ControlView Core User Manual*. It contains information on:

- hardware and software requirements
- using the software for remote database access and file transfer

Audience

Read this manual if you plan to install or operate the ControlView system on a peer-to-peer local area network. You should be familiar with the ControlView system and have read the *ControlView Core User Manual*. You should also be familiar with DOS, with networking concepts and procedures in general, and with the Novell® NetWare® or IBM™ Token Ring software in particular.

Print Conventions For Commands

This manual uses the print conventions outlined in the *ControlView Core User Manual*.

Related Publications

Allen-Bradley Publications

A complete list of publications providing more information on the ControlView System is included in the *ControlView Core User Manual*.

Novell Publications

For more information on the Novell Software, refer to the publications supplied with Novell NetWare, in particular, the Installation manual and the Command Line Utilities manual.

IBM Publications

For more information on IBM Token Ring, refer to the publications listed below. These are available from your IBM representative or local IBM branch office.

- IBM Token Ring Network Introduction and Planning Guide
- IBM Token Ring Network Installation Guide
- IBM Local Area Network Support Program User's Guide

POMs Publication

For more information on ControlView-POMs connectivity, refer to the publication below, which is available from your INCODE supplier.

- TEXTCOMM 731 User Reference Guide
Allen-Bradley POMS/ControlView Application Utility

Glossary of Terms

Active node: a node whose services are in use by another node, or which is using another node's services; a node having associations

Association: the logical connection between a client node and a server node

Client node: a node using another node's services

Communication Network: the set of data-bearing cable and interface modules linking two or more programmable controllers with each other and with ControlView; a data highway

Connection: the accessing of one physical node's resources by another physical node

LAN: Local Area Network; two or more computers connected by cable, communicating and sharing resources; not to be confused with a communication network

LAN/PC: Allen-Bradley's Personal Computer network

Local node: the network node you are operating

Logical node: the name assigned to a remote node on the network. This name is defined in the Node Configuration window; all references to the node will be references to its logical node name. This is not the same as a physical node (see below). A logical node is a name assigned to a physical node

NetBIOS™: IBM standard network software interface

Node: the name of a station on a network. PLC stations are referred to as nodes on the communication network. A node on the local area network is a computer station, such as a ControlView station, with a unique name.

Physical node: the name you give to your own local ControlView station in the Network Configuration window

PLC®: Programmable logic controller; (PLC is an Allen-Bradley registered trademark)

Point: a single address in a programmable controller

Remote node: any node that is not the local node

Server node: a node whose services are being used by another node

Station: a device on a network

Tag: the name given to a point in the database

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Introduction

Local Area Networks

Any system of hardware and software that allows two or more computers to communicate or share resources—even two computers sharing a printer—is a network.

A Local Area Network (LAN) consists of two or more workstations connected via cable. Each of the workstations may be attached to one or more *communication* networks (highways) as well as one *local area* network.

ControlView Networking Software

The ControlView Networking option consists of system files which enable ControlView stations to co-exist with and use networking hardware and software in a peer-to-peer fashion.

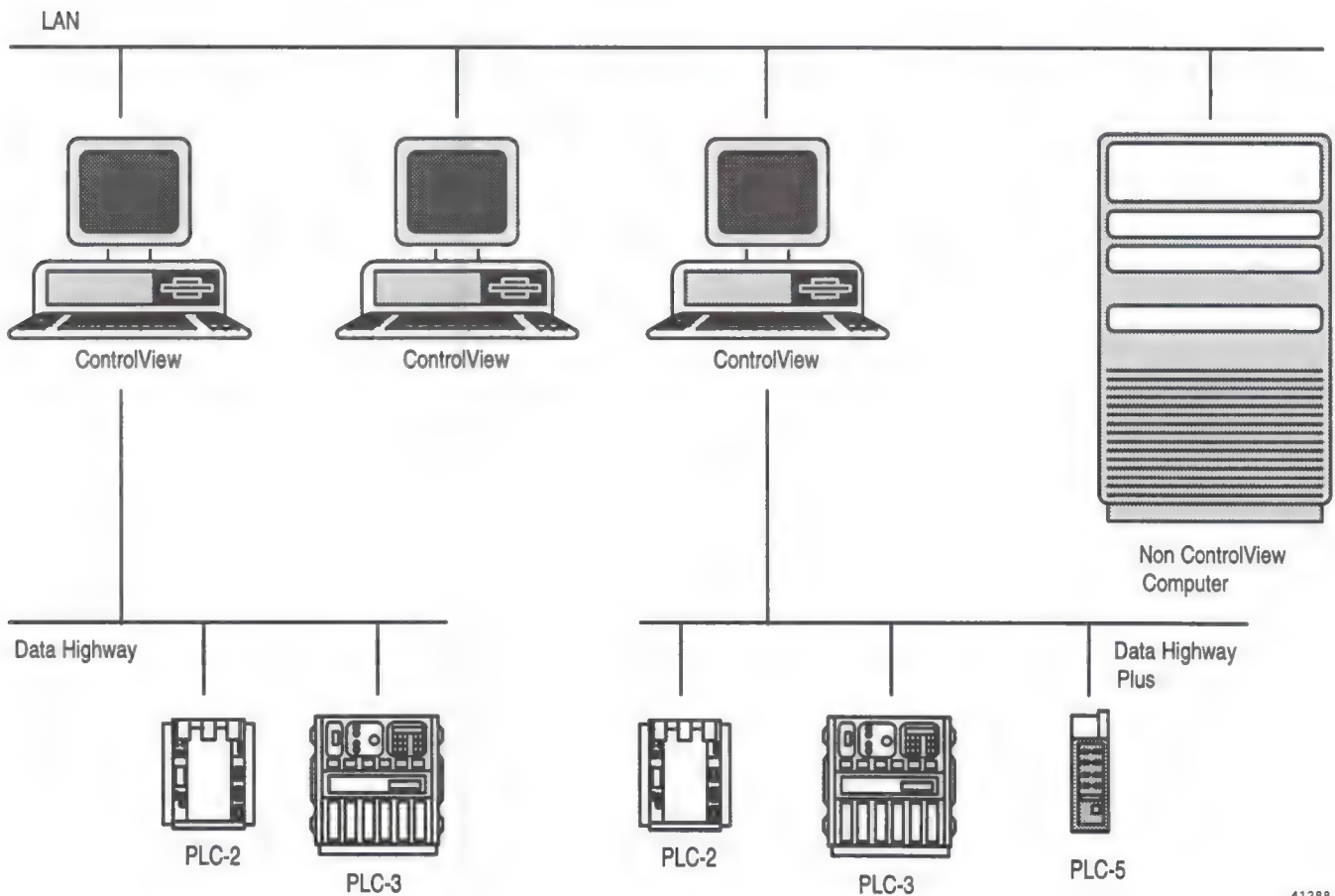
The main features of the Networking option are:

- direct access to remote ControlView databases, allowing tag read and writes and status checks between ControlView nodes
- transparent access to any point on any highway from the local ControlView node (workstation). By giving tags in the local database addresses that refer to points in remote databases, points from anywhere in the plant can be used by ControlView applications—Event Detector, Alarming, Derived Tags, Data Logger, C-Toolkit programs, or any other—in the same way a point in the local database might be addressed
- remote file transfer; application programs and data files stored on any ControlView computer connected to the network cable can be copied to any other ControlView computer on the local area network
- elimination of redundant scanning in small PLC networks; PLC data can be gathered in one ControlView node on the data highway. All other ControlView nodes can take their tag information from that node along the LAN, rather than having each ControlView node access the same PLCs again and again on the data highway
- improved efficiency in large communication networks by having PLCs distributed across multiple subnetworks, with multiple ControlView stations sharing the scanning load

- the inclusion of non-ControlView stations (such as mainframes or minicomputers) through a file server on the network, able to store, access and process data exported by ControlView in appropriate file formats

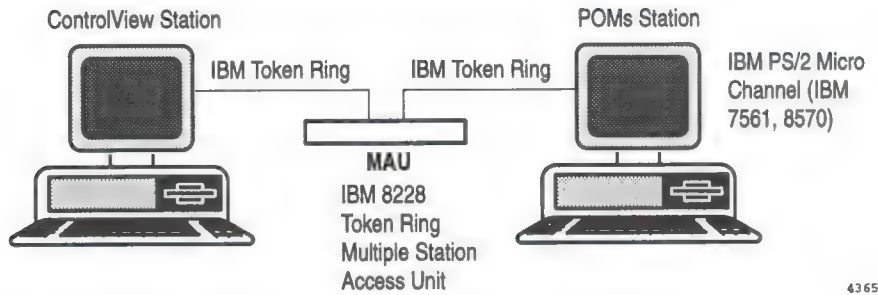
The illustrations below show network relationships.

Figure 1.1
ControlView Networking



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Figure 1.2
ControlView Networked to IBM POMs Workstation



Installation and Setup

Hardware Requirements

Beyond the normal ControlView hardware, Networking requires one of the following adaptors:

For AT type computers with Ethernet®:

- AT Bus Ethernet Card (6628-A5)

For AT type computers with Broadband:

- Allen-Bradley Series B LAN/PC (6625-C2x)

For PS/2 type computers with Ethernet:

- Micro Channel Ethernet Card (6628-A7)

For PS/2 type computers with Broadband:

- Allen-Bradley LAN/PC2 card (6625-D1)
- Allen-Bradley LAN/PC2 LAN interface (6625-M1X)

For AT type computers with IBM Token Ring:

- IBM Token Ring Network 16/4 Adaptor (25F9492)

For PS/2 type computers with IBM Token Ring:

- IBM Token Ring Network 16/4 Adaptor/A (92F6959)

Important: In cases of simultaneous heavy traffic on both the local area network and the communication network, the use of a KT card (not an IDH or a KF2) for PLC communication is required.

Before Using Networking

Before using Networking, you must have already installed:

- ControlView
- workstation software: one of
 - Novell NetWare Version 2.12 or later
 - IBM LAN Support software version 1.12

Table 2.A
Possible Configurations

This networking software:	Runs on these networks:	Supports file server?	Supports printer?
Novell NetWare	Ethernet	Yes	Yes
	Token Ring	Yes	Yes
	LAN/PC	Yes	Yes
IBM LAN Support	Token Ring	No	No

POMs Connectivity

IBM Token Ring connectivity to the Process Management Operations software (POMs) is available from INCODE Inc. (703) 709-7667, ext. 102, and provides:

- read/write tag values to and from ControlView's Current Value Database
- read/write files to and from ControlView
- messaging capability
- intermediary connection between ControlView and the upper level host

To connect ControlView and POMS, you require at least two computers connected on the Token Ring network, equipped as shown in Table 2.B.

Table 2.B
ControlView/POMs Connectivity Requirements

ControlView Computer	POMs Computer
ControlView Core plus Networking and a Driver	IBM Token Ring Adapter
IBM Token Ring Adapter	OS/2 v2.0
IBM LAN Support Software	OS/2 v1.0 Extended Services
	POMs release 2.1
	POMS/CV connection utility TEXTCOMM 731, available from INCODE

Using Novell NetWare

Before using Networking, you must have already run RTXHELL Version 2.0.1. Run RTXHELL *before* loading the network driver (IPX).

Important: The major revision levels must be the same, for the Novell program and the IPX driver, NETBIOS and NET*n* programs.

Copy the file named SHELL.CFG from your \ACCESS\SYS directory into the directory containing the NETBIOS program. Then follow these steps to start up your local area network before starting ControlView:

1. Log onto the drive where ControlView is installed.
2. Run the RTXHELL.EXE program. At the DOS prompt, type:

\ACCESS\SYS\RTXHELL -In *press Enter*

where *n* is the interrupt request (IRQ) number for your network card.

Example: Interrupt Request Number

If your network card is using Interrupt 5, you would type

\ACCESS\SYS\RTXHELL -I5 *press Enter*



ATTENTION: You must use the correct interrupt request number. Verify the number with your network manager if there is any doubt. Do *not* use IRQ3 if you are using Novell networking software with ControlView Networking.

3. Load your network driver. The procedure you follow depends on your hardware. Please refer to the documentation with your network card for details.

IPX *press Enter*



ATTENTION: You must run RTXHELL.EXE before running the network drivers. Otherwise ControlView may perform erratically and may require rebooting.

4. If, and only if, your LAN includes a file server that you want to use with your ControlView nodes, run the NET command. Type:

NETn *press Enter*

where *n* is the DOS version you are using: 3 for DOS 3.3, 4 for DOS 4.01, and 5 for DOS 5. Refer to your Novell documentation for details.

5. Run the NETBIOS.EXE program by typing

NETBIOS *press Enter*

For more information on the NetBIOS.EXE file, see the Novell NetWare *Supervisor's Guide*, Chapter 2, *Getting Started*.

6. Log onto the file server.
7. Once you have successfully logged onto a Novell file server, run the CASTOFF ALL command to filter out any broadcast messages that may be sent to the ControlView node. Type:

CASTOFF ALL *press Enter*



ATTENTION: Failure to issue this command can cause the system to fail. Broadcast messages can bring ControlView to a stop.

For the following examples, assume that:

- ControlView is loaded on drive C
- the network uses Novell software, which is in the \NOVELL directory on the C drive
- the IRQ level is 5
- the system is running DOS 3.3
- the user is logging on to the file server RD_2 on the LAN

Example: Starting the LAN for use with the Networking Option

```
C: press Enter
CD \NOVELL press Enter
\ACCESS\SYS\RTXSHELL -I5 press Enter
IPX press Enter
NET3 press Enter
NETBIOS press Enter
F: LOGIN RD_2 press Enter
CASTOFF ALL press Enter
```

You can automate the above procedure by including it in a batch file, such as your AUTOEXEC.BAT file.

Example: AUTOEXEC.BAT file

This example assumes that ControlView is installed on drive C.

```
C:\ACCESS\SYS\RTXSHELL -I5
C:\NOVELL\IPX
C:\NOVELL\NET3
C:\NOVELL\NETBIOS
F:LOGIN RD_2
CASTOFF ALL
```

Using IBM LAN Support

To use IBM LAN Support software (with IBM NetBIOS instead of Novell NetBIOS), add the following lines to your CONFIG.SYS file:

```
device = \access\sys\rtxshell.sys -In  
device = dxma0mod.sys  
device = dxmc0mod.sys  
device = dxmt0mod.sys
```

Where *n* is the interrupt request (IRQ) number for your network card.

This CONFIG.SYS file will automatically start up the LAN.

Configuring Networking

Before using the LAN for remote database access or file transfer, you must:

1. Choose *Configure Data Channel* and define the data channel for the network.
2. Choose *Configure ControlView Nodes* and define the physical node name for your node.
3. Choose *Configure Nodes* and assign each physical node (defined in Step 2) a logical node name. From this point, you will refer to the network stations by their logical node names.
4. Configure the scan classes for the nodes.
5. Define points in the local database to correspond to points you intend to access in remote databases.

Important: The *Node Name* field in a tag definition window refers to the **logical node name**.

Each node must have a unique name before it logs onto the network for the first time. Once a node has a name and has been logged onto the network, you can change its configuration parameters—its name and the services available on it—from any other node on the LAN. This allows a network manager to design and implement an entire ControlView network system from one location.

From the local node, you cannot perform the following actions on a remote node:

- you can't assign the node name the first time
- you can't log on and off the network

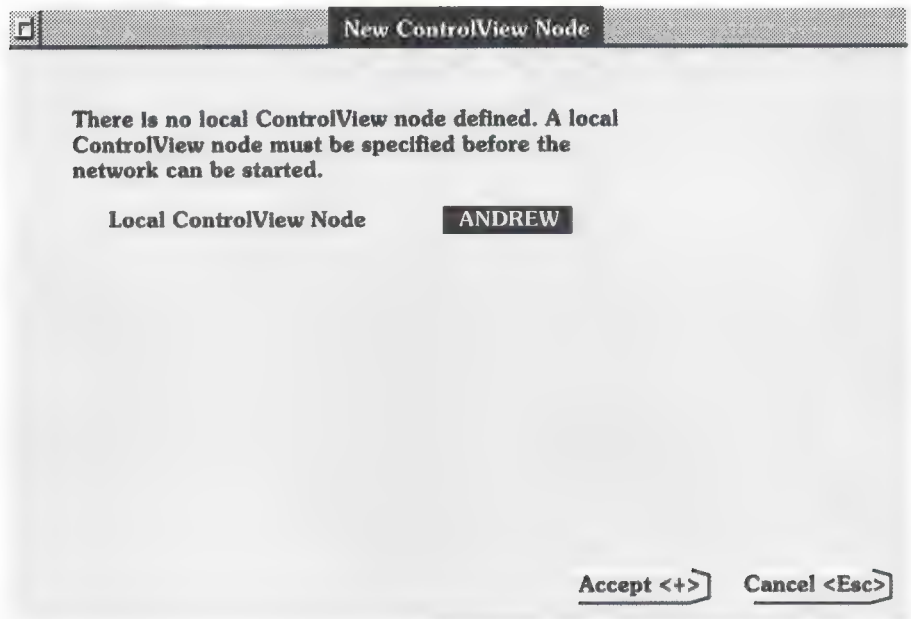
- you can't load and configure a database
- you can't configure scan classes

Configuring ControlView Nodes

Any ControlView node logged onto the LAN can be configured from any other node.

1. Choose *Configure ControlView Nodes* under Configure in the Setup Menu.
2. The first time, *and only the first time*, this item is chosen on each node, the New ControlView Node window appears. Type a unique name, 8 characters maximum, for the local ControlView node. Letters and numbers are valid characters for physical node names.

Figure 2.1
New ControlView Node Window

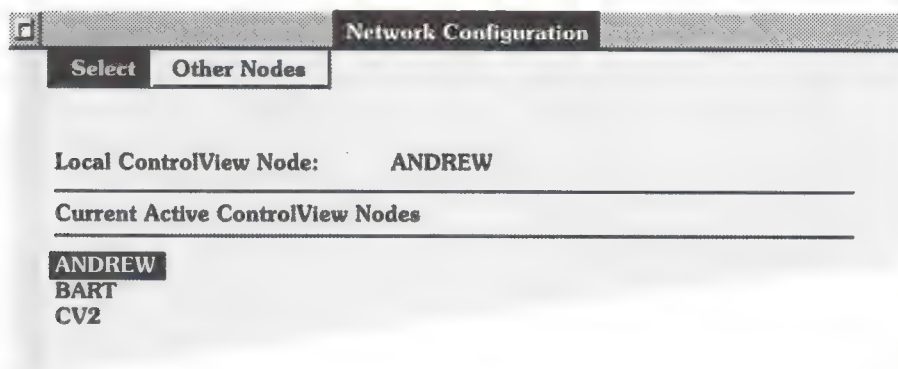


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Important: This name corresponds to the name in the *Station* field in the Node Configuration window.

3. Choose *Accept* or press the + key to save the name. ControlView and the other nodes will use this name to identify the local node whenever it is logged on.
4. The Network Configuration window appears, with an alphabetical list of active ControlView nodes. Nodes that are using the services of the local node or whose services are in use by the local node are considered active.

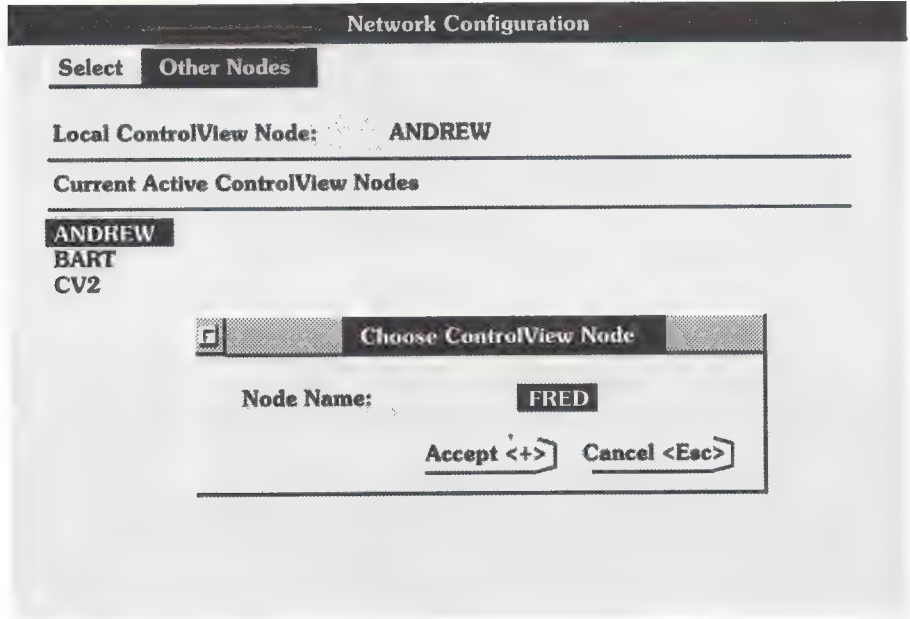
Figure 2.2
Network Configuration Window



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5. With *Select* highlighted, move the cursor to the node you want to configure and press **Enter**.
6. To configure a node that is not active, and therefore isn't in the list, choose *Other Nodes*. Then enter the node name.

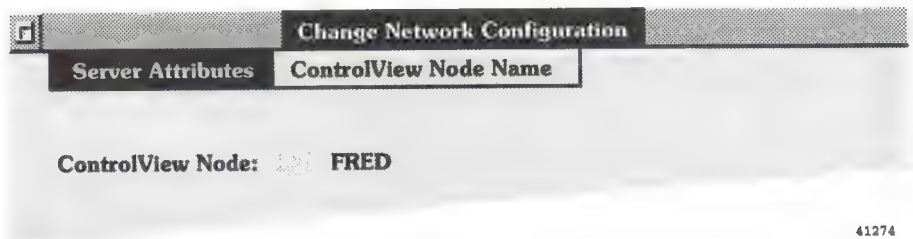
Figure 2.3
Choose ControlView Node



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Once a node has been specified, ControlView establishes a connection to it (provided that the network is initialized and the node is available). The Change Network Configuration window appears, showing the specified node name.

Figure 2.4
Change Network Configuration

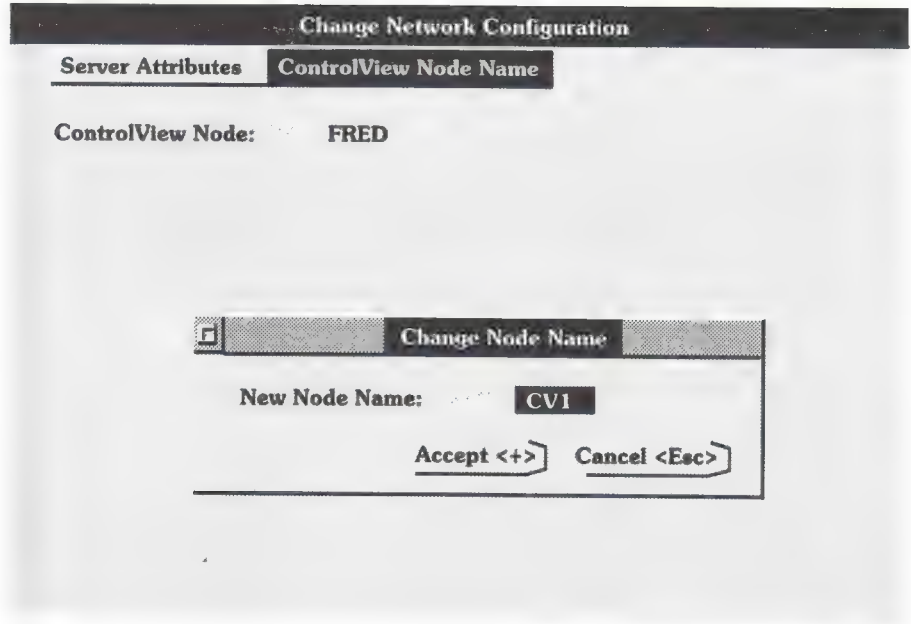


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To rename the selected node:

1. Choose *ControlView Node Name*. The Change Node Name window opens.

Figure 2.5
Change Node Name



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2. Type a new name for the selected node and click on the *Accept* button.

Important: The new name will appear in subsequent windows, but will not be recognized by other ControlView nodes until the next time the node is logged on.

To configure the services for the selected node:

1. Choose *Server Attributes* from the menu bar at the top of the window and press **Enter**. The Server Selection window appears.

Figure 2.6
Server Selection

Service	Description	Access	Load Option
CVDBSV CVFTSV	Database Access File Transfer	Enable Disable	Static Dynamic

2. In this window, you choose the services that the node you are configuring will provide to other nodes.

- Access

Choose *Disable* to block remote access to the node's database and prevent the transfer of files.

- Load Option

Choose *Static* to load the service application when the ControlView node logs onto the local area network. Choose *Dynamic* to load the service application upon first request from a remote node.

The Load option ensures that critical applications (like Database Access) are loaded whenever the node logs onto the LAN. Less critical applications (like File Transfer) can be loaded only when required, and need not occupy memory while not in use.

Configuring Scan Classes for ControlView Nodes

To configure the scan classes for your ControlView nodes:

1. Choose *Configure Scan Classes* under *Configure* in the Setup Menu. The Scan Class Configuration window appears.

2. Assign at least one of the scan classes to the "ControlView" class. Any points in the local database that refer to points in the databases of remote ControlView nodes must be configured to the scan class reserved for ControlView.

Figure 2.7
Scan Class Configuration Window

Scan Class Configuration			
Scan Class	Foreground Period (sec)	Background Period (sec)	Device Class
A	5	30	ControlView
B	10	60	ControlView
C	2	5	Allen-Bradley
D	5	60	Allen-Bradley
E	5	5	Allen-Bradley
F	30	60	Allen-Bradley
G	2	5	Modicon
H	60	60	Modicon
S1			
S2			
S3			

Accept <+> Cancel <+>

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3. Assign a scan period for the ControlView nodes. This determines how often the local node will scan the remote node's database.

Important: Don't scan the remote node more frequently than the remote node is scanning the programmable controllers. This will only increase network traffic without bringing in new data.

Assigning Points for Remote Database Access

To access a remote ControlView database, define a point in the local database that refers to a point in the remote database.

Important: Only SET, RAMP and STATUS commands can access remote database points without reference to a local point. They use the remote database address as if it were a PLC address.

1. Choose *Edit Database* from the Configure menu, then edit either an analog point or a digital point (see the *ControlView Core User Manual*, Chapter 3, *The Setup Menu*).
2. In the Address Type field, choose *CtrlView*.

Important: Structured tags and string tags cannot use CtrlView as an address type. Therefore, structured and string tags in the local database cannot access a remote database.

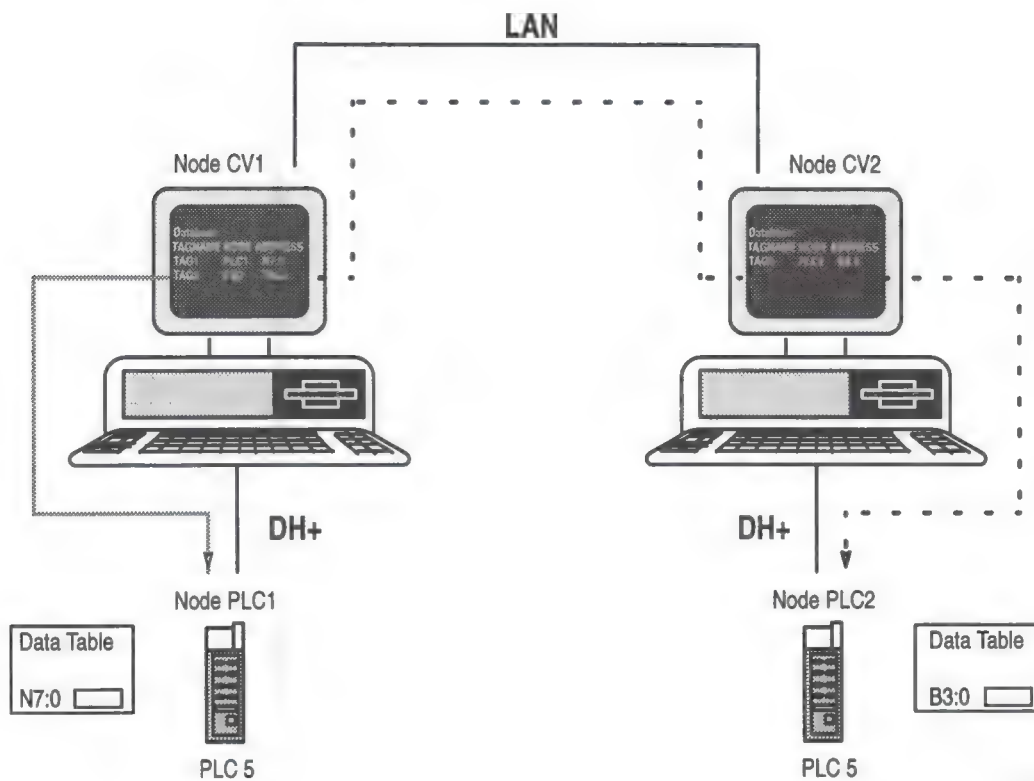
3. In the Node field, type the logical node name of the remote node whose database you wish to access.
4. In the Address field, type the name of the remote database point you wish to access.
5. In the Data Type field, choose *Default*.

Important: Configure the Minimum, Maximum, Scale, Offset, Initial Value and Units fields in the same way in the local and remote databases. Otherwise values may be changed in unexpected ways. Normally, set Scale to 1, and Offset to 0, in both local and remote databases.

All the functions supported for remote PLC points are supported for remote ControlView points.

Any changes to the value of the point in the local database will be passed on to the point in the remote database and to the PLC address associated with the remote point.

Figure 2.8
Remote Database Access



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On the network shown above, ControlView Node CV1 requests a Tag Status on Tag2. The database finds that Tag2 refers to the address of a tag (Tag3) in ControlView Node CV2's database. CV1 requests CV2 to return the value of Tag3 in its database. CV2's Tag3 points to address B3:0 in the PLC2 data table. CV2 performs one-shot read of B3:0, and returns the contents to ControlView Node CV1.

Figure 2.9
Sample Analog Point Window Configured For Remote ControlView Access

The screenshot shows a software window titled "Configure Analog Point". It has three tabs: "Modify", "Alarms", and "Delete", with "Modify" being the active tab. The window contains the following fields and values:

- Default group/structure:** (empty)
- Database name:** SAMPLE
- Point Name:** Tag2
- Access (A-P):** ☒
- Description:** This tag refers to Tag3 on remote ControlView CV2
- Address Type:** CtrlView
- Address:** Tag3
- Node Name:** CV2
- Scan Class:** A
- Data Type:** Default
- Minimum:** 1
- Maximum:** 100
- Scale:** 1
- Offset:** 0
- Initial Value:** 0
- Units:** 1

At the bottom right, there are two buttons: "Accept <+>" and "Cancel <Esc>".

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System Specifications

Maximum Number of Nodes

The maximum number of actual nodes on your network is limited only by the type and topology of your network. The specifications and limits defined below refer only to *active* nodes: nodes running ControlView software and exchanging data via the LAN. They do not imply any new limitations on the physical size of your LAN.

Maximum Number of Connections Between Nodes

A *connection* exists whenever one node accesses the resources (database or file transfer) of another node. The default maximum number of simultaneous connections allowed by ControlView Networking software is 10. This means that any one node can simultaneously access a maximum of 10 other nodes or, conversely, can be simultaneously accessed by a maximum of 10 other nodes.

Maximum Number of Client/Server Associations

A *client/server association* exists each time a remote node places tags in a unique scan class on scan, or when a file transfer takes place. An association differs from a *connection* in that more than one association may exist on one connection.

The maximum number of client/server associations allowed at any one time is 32.

Example: Connection and Association Limits

Eight ControlView nodes (clients) request tag information from one ControlView node's database (the server). Each of the eight clients has placed tags from four different scan classes on scan simultaneously. This would require eight connections and $4 \times 8 = 32$ associations (the association limit) at the server node.

Maximum Number of Tag Requests

Each time a client node requests tag information for a read or write, one *Tag Request* is used at the server node. ControlView permits a maximum of 16,000 simultaneous tag requests.

Using Networking

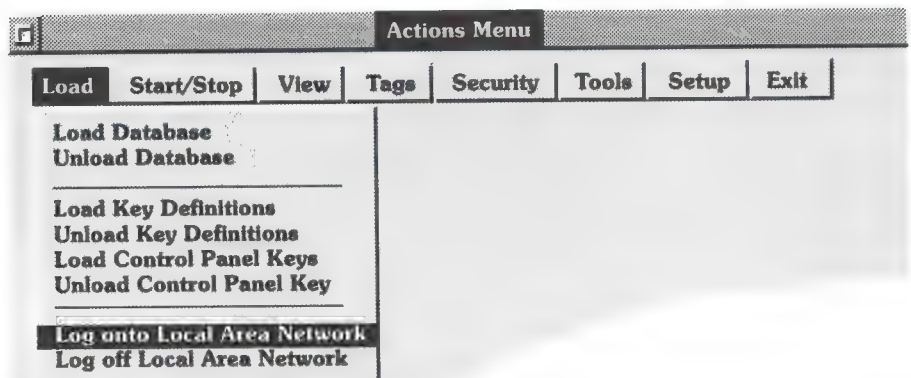
Networking Procedures

This chapter explains how to log ControlView nodes on and off the LAN, and describes the uses of the Networking option.

Logging onto the Local Area Network

In the Actions Menu, open the Load menu and choose *Log onto Local Area Network*.

Figure 3.1
The Actions Menu



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A message appears, naming the network(s) being initialized. When initialization is complete, a message appears, similar to the following:

```
The name of this ControlView node is 'name'.
The following network configuration is active:
Network 1 - NetBIOS (NW1:)
```

Name will be the physical node name of the local node, as defined in Configure ControlView Nodes.

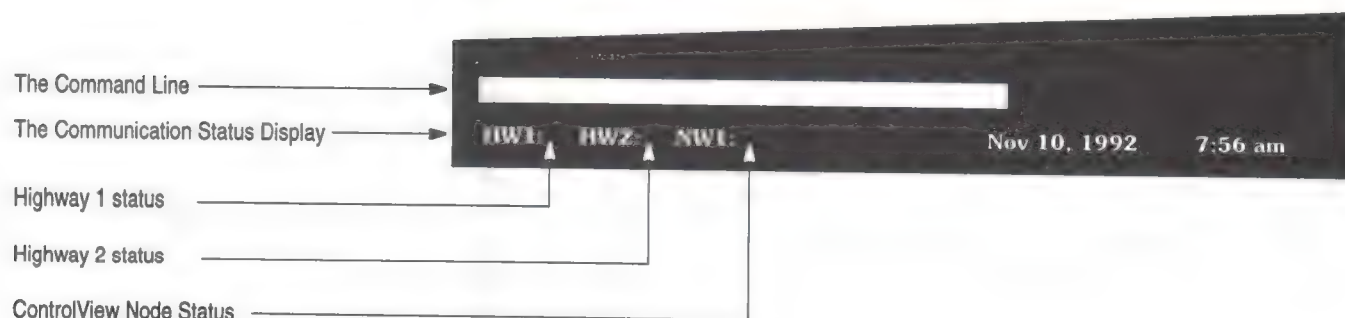
If the logon fails, a message appears, similar to the following:

```
The name of this ControlView node is name.  
  
NO NETWORK COMMUNICATION IS POSSIBLE!  
  
The network could not be started for one of  
the following reasons:  
1. Network not configured.  
2. RTXHELL-not loaded or old version (must  
   use V 2.0.1 or later).  
3. Network drivers not loaded.  
4. Hardware problems.
```

Once the node is logged onto the LAN, the Communication Status Display at the bottom of the screen includes an NW1 field. It displays the names of ControlView nodes communicating with the local node. The field displays a maximum of eight characters.

Important: When *sending* to a remote node, the *logical* name of the remote node is displayed. When *receiving* from a remote node, the remote node's *physical* nodename is displayed.

Figure 3.2
Communication Status Display



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The color of the node name indicates the status of the network operation:

- green on black operation was successful—nodename disappears automatically
- black on red operation failed—nodename disappears when the next network operation occurs

- yellow on black operation successful, but an error condition exists from a previous operation—nodename disappears automatically

To reset the color of the window, so that subsequent successful operations can be displayed in green:

Either type the following command in the command line:

NETSTATUS RESET *press Enter*

Or, choose *Local Area Network Status* under Tools in the Action menu, and choose *reset*.

Typing the NETSTATUS command in the command line, makes the network status window appear and disappear.

Error Reporting

The kind of errors that cause the node name to print in black on red can involve the client node and the server node:

- network transmission errors are displayed on the node where the error is detected. This may include both client and server nodes
- database errors resulting in no data or incorrect data being written to the database will be displayed on the client node
- tag read-or-write errors will be displayed on the client node

Errors are also logged in the Activity Log where they can be viewed.

Logging Off the Local Area Network

Choose *Log off Local Area Network* under Load in the Actions menu to remove the local ControlView node and all public services specified in its Network Configuration window from the network.

If network services are in use, the following message appears:

Network Logoff Warning

There are still applications running on this node. Do you still wish to log off the Network?

Load Database
Unload Database

Load Key Definitions
Unload Key Definitions
Load Control Panel Keys
Unload Control Panel Keys

Log onto Local Area Network
Log off Local Area Network

If you choose *Accept*, the applications will stop, and the logoff procedure will complete.

To log off the network without triggering the Network Logoff Warning message, type this command in the command line:

NETLOGOFF /F press *Enter*

Any network applications running will be cancelled.

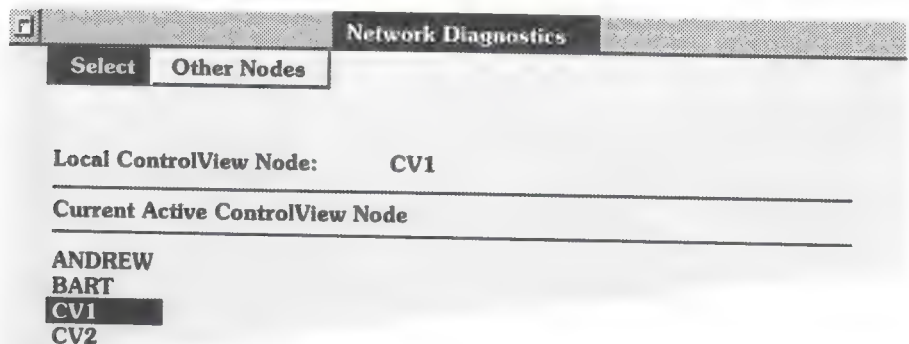
Network Diagnostics

The Network Diagnostics display reports the current status of ControlView network activity. To view the display:

1. Be sure your LAN is up and running, and that your local ControlView node is logged on.
2. Choose *Local Area Network Status* under Tools in the Actions menu.

The Network Diagnostics window appears, with the local ControlView node name displayed at the top and a list of active nodes below.

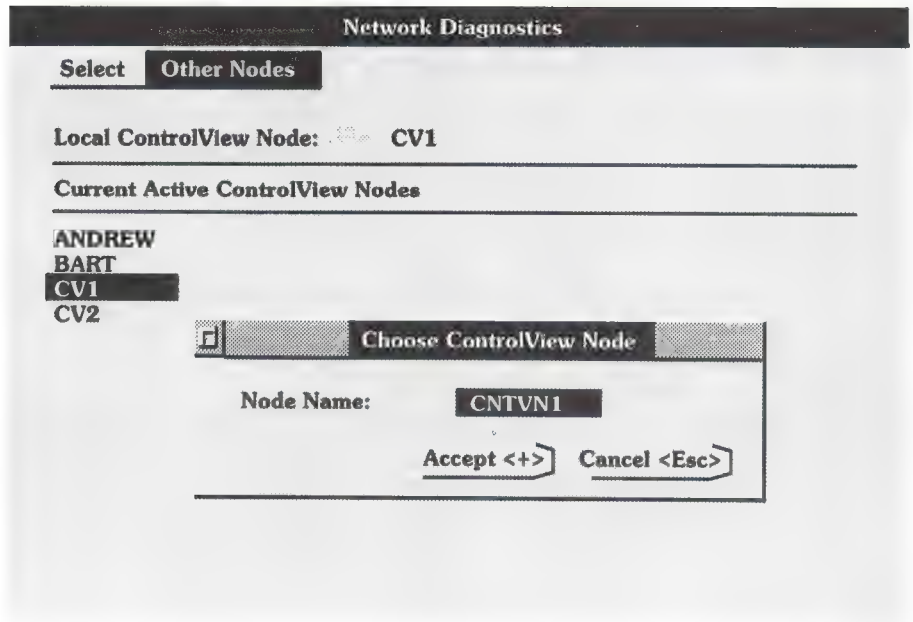
Figure 3.3
Network Diagnostics



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3. With *Select* highlighted, move the cursor to a node name and press *Enter*.
4. To view the status of a remote node that isn't in the list, choose *Other Nodes*. The Choose ControlView Node window opens. Type the node name in the window and press *Enter*.

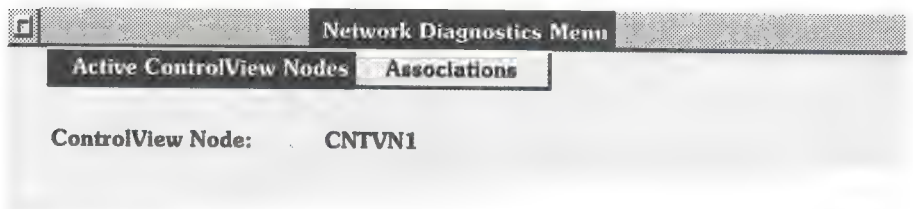
Figure 3.4
Choose ControlView Node



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The Network Diagnostics Menu window appears.

Figure 3.5
Network Diagnostics Menu



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- To find the *number* of associations to a given node, choose *Active ControlView Nodes*. The following window appears.

Figure 3.6
Active ControlView Nodes window

Active ControlView Nodes	
ControlView Node: CNTVN1	
ControlView Node	Number of Associations
ANDREW	1
BART	1
CV2	2

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- To view more complete information on these associations, choose *Associations*. The Service Associations window appears.

Figure 3.7
Service Associations

Service Associations			
ControlView Node: CNTVN1			
Service	Type	Associated Node	Description
CVDBSV	Client	Andrew	(Not available for Clients)
CVDSV	Server	Bart	Database Access
CVFTSV	Server	CV2	File Transfer
CVFTSV	Client	CV2	(Not available for Clients)

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The Service Associations window shows the nodes, the services that are in use, and their client/server relationship to the node named.

Examples: Associations

In Figure 3.7, ControlView node CNTVN1 is associated with other ControlView nodes on the local area network in the following ways:

CNTVN1 is a client of node Andrew's database access service; i.e., CNTVN1 has requested remote access to Andrew's database.

CNTVN1 is a server to node Bart; i.e., Bart has requested remote access to CNTVN1's database.

CNTVN1 is a server to node CV2, the service being a file transfer; e.g., CV2 has requested that a file be transferred from CNTVN1 to CV2.

CNTVN1 is, at the same time, a client of CV2's file transfer service; e.g., CNTVN1 has requested a file transfer from CV2.

Networking Functions

The Networking option allows ControlView to perform two functions:

- remote database access
- remote file transfer

Remote Database Access

Points on the network can be accessed as if they were connected directly to the local ControlView node by a data highway. By defining points in the local database to represent points in a remote database, remote points can be put on scan, represented on graphics displays, and included in data logging, alarm logging and trending. Remote points can also be accessed directly by the SET, RAMP and STATUS commands.

Direct Access of Remote Database

There is a special format for directly setting, ramping or viewing a tag value on a LAN. It specifies a ControlView node and tag. The format is identical to the format for direct programmable controller addressing, except that there is no \$ before the nodename.

- The *Set a Tag Value* format is:

[options] <node::tagname> <value>

node is a remote ControlView

tagname is a point on that node

- The *Ramp a Tag Value* format is:

[options] <node::tagname> <value>

node is a remote ControlView

tagname is a point on that node

- The *View Tag Status* format is:

[options] <node::tagname> [tag]

node is a remote ControlView

tagname is a point on that node

Important: These menu items do not require a point in the local database to access points in remote databases. They (and their associated commands, SET, RAMP and STATUS) use the tagname in the remote database as if it were a programmable controller address.

Because of this, only numeric values can be used when writing directly to points in a remote node's database. Labels and percentages of the total Minimum/Maximum range will not work, since, as in a programmable controller address, Minimum/Maximum and ON/OFF labels are not recognized.

Examples: Direct Remote Database Access

To read and set an analog tag named "tank.level" on a remote node named "CV2", without defining a local point:

1. Choose *View Tag Status* under *View* in the Actions menu.
2. When the data entry window appears, type in the node and tagname of the tag to be checked:

CV2::tank.level

The current value of the point will be displayed.

3. Choose *Set a Tag Value* under *Tags* in the Actions menu.
4. When the data entry window appears, type in the node and tagname of the tag and a new value:

CV2::tank.level 60

Important: Only numeric values can be used. ControlView considers this to be a programmable controller address, and does not recognize such parameters as Minimum/Maximum or ON/OFF.

5. Choose *View Tag Status* under *View* in the Actions menu again to see the changed tag status.
6. Choose *Ramp a Tag Value* under *Tags* in the Actions menu.
7. When the data entry window appears, type in the node and tagname of the tag and the new value.

CV2::tank.level +5

Remember that percentages will not work with this address.

8. To see the new value, (65), choose *View Tag Status* under *View* in the Actions menu again.

If tank.level was a digital tag, only the values 1 and 0 could be sent.

Remote Database Access via Points in the Local Database

Once the remote point has been given a tagname in the local database, it can be monitored and controlled in exactly the same way as any other point in the local database. If we assume that the local ControlView node, CV1, has a point in its database named Tank.Level, and that point's address is the tag Tank.Level in CV2's database, the above procedure could be done more simply.

Examples: Remote Database Access via the Local Database

1. Load the database in which the local tag tank.level is defined.
2. Choose *View Tag Status* under *View* in the Actions menu.

3. When the data entry window appears, type in the tagname of the tag to be checked:

tank.level

A request is sent from the local ControlView node, CV1, along the local area network, to ControlView CV2. If `tank.level` is a local tag on CV2, its value is retrieved from the database. If `tank.level` is a PLC point, the PLC is queried for the value. The current value of the tag is returned to the tag `tank.level` in CV1 over the local area network, and displayed by Tag Status.

4. Choose *Set a Tag Value* under *Tags* in the Actions menu. When the data entry window appears, type in the tagname of the tag and the new value.

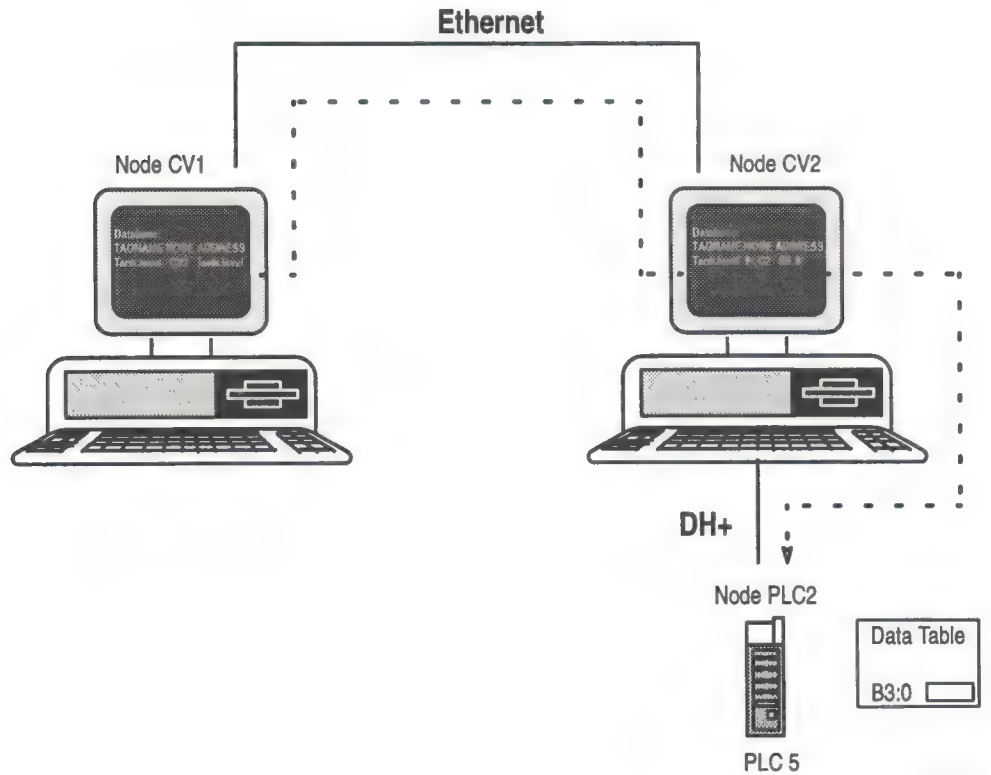
tank.level 50%

The command travels the same route to the remote tag and resets its value. The remote tag passes the instruction along to the point, and the programmable controller adjusts the level of liquid in the tank accordingly.

You can send percentage values now, but remember that the value sent will be 50% of the Minimum/Maximum range specified in the *local* database. If this range differs from that configured for the remote point, the value received at the remote end may not be what you expect. For this reason it is advisable that the two points be configured in the same way.

5. Choose *View Tag Status* under *View* in the Actions menu again to see the changed tag status.
-

Figure 3.8
Example of Remote Database Access via the Local Database



Command line instructions would omit the node name parameter in the same way. See Appendix A, *Networking Commands*, for details of the SET, RAMP and STATUS commands.

Remote tags referenced in this way can be included in Derived Tag calculations, in the Event Detector, in a C-Toolkit program, or in any other application in the same way that a tag in the local database can.

Remote File Transfer

To transfer a file to or from a remote ControlView station, choose *Network File Transfer* under Tools in the Actions menu.

A data entry window opens:

Figure 3.9
Source and Destination Window



Type the path and file specifications for *source* and *destination* and press **Enter**. If your specifications contain more than 50 characters, you will have to perform the transfer by putting the equivalent command, REMCOPY, in a macro.

The syntax can be either:

```
[/B]<nodename::>[drive:][path]<filename>[.ext] [drive:][path][filename][.ext]
```

or

```
[/B][drive:][path]<filename>[.ext] <nodename::>[drive:][path][filename][.ext]
```

The parameters are:

/B performs the file transfer in the background, without opening the file list window.

Important: When this parameter is included, the File Transfer task cannot be aborted.

nodename is the ControlView node to copy the file from or to

drive is the drive on which the source or destination is located

path is the DOS path name of the file to be copied from or to

filename is the name of the file to be copied from or to

.ext is the file name extension

The first *filename* is the source file and the second *filename* is the destination.

The *nodename* specifies the remote ControlView node on the local area network to copy to or from.

Important: A *nodename* *must* be included in either source or destination specification, even for a local copy. A *nodename* *cannot* be included in both file specifications; this would amount to the local node trying to copy a file from one remote node to another remote node, which is not supported.

You can use the following wild card characters in your source and destination specifications:

Table 3.A
Wild Card Characters

This character:	Has this function:
?	matches any single character. Does <i>not</i> match a null character
*	matches any group of characters in a file name or extension
\	in source, copies entire directory; at the end of destination, defines a directory

To copy a set of files into a remote directory, end the remote pathname with a backslash (\).

During the file transfer, a status window displays the files being transferred.

Examples: File Transfers

CV1 is the local node, and CV2 is the remote node. The following are responses to the prompt:

Enter [source] [dest]

CV2::C:\UTIL\FILE.TXT A:\FILE.TXT

copies the file File.Txt from the C drive of ControlView Node CV2 to a floppy disk in the local node's drive A.

C:\ACCESS\MCR\STARTUP CV2::C:\ACCESS\MCR

copies the local node's startup macro to the directory \ACCESS\MCR on ControlView node CV2

CV2::D:\ACCESS\EV*.* C:\ACCESS\EV

copies all the Event Detector configuration files from ControlView node CV2 to the local node's \ACCESS\EV\ directory.

\ACCESS\CTK\TSK\ CV2::D:\ACCESS\CTK\TSK

copies the entire C-Toolkit task directory and all its files from the local node to ControlView node CV2's D:\ACCESS\CTK\TSK\ directory

CV1::A:*.HLP \ACCESS\HLP

copies all the help files from the local node's floppy (A:) drive to the local \ACCESS\HLP\ directory. This is a local file transfer.

Networking Commands

NETCONFIG

NETCONFIG

Calls up the Network Configuration window.

This command has no parameters.

NETDIAG

NETDIAG

Calls up the Network Diagnostics display.

This command has no parameters.

NETLOGON

NETLOGON

Logs the ControlView node onto the LAN using the parameters defined in the Network Configuration window.

This command has no parameters.

NETLOGOFF

NETLOGOFF [/F]

Removes the ControlView node and all its services from the LAN.

The /F parameter logs the node off the network without triggering a warning message. Any network applications running at the time are aborted.

NETSTATUS

NETSTATUS [RESET]

Toggles the NW1 *node* field on and off.

The RESET parameter resets the color of the *node* field display to green on black after an error, allowing subsequent successful operations to be shown in green. The NW1 field does not toggle off if the RESET parameter is used.

RAMP

RAMP [*options*] <location> <value>

Increases or decreases the value of an analog tag.

[*options*] are:

/s Silence all error messages (such as "Write Failure").

/v Perform read-back Verify on the write.

Normally, the system waits for an ACK (acknowledge) from the local communications module (e.g., 1770-KF2), to determine if a write has passed. This is sufficient verification of writes in most cases.

The /v option provides an extra level of security by performing a read immediately after the write to verify that the value was actually altered in the programmable controller.

This option is useful if the communications network is in poor condition, or susceptible to noise interference.

Use this option only if it is certain that no other device will be altering the programmable controller location being written to.

<location> is one of the following:

- A valid tag name such as tank.level
- A node name and physical address. The format for specifying this location is:

\$nodename::address

where nodename is defined in the Node Configuration window, and address is the physical programmable controller address syntax. The dollar sign (\$) distinguishes a programmable controller node name on the communication network from a ControlView node name on the LAN. Here is an example of a valid programmable controller address:

\$fred::N7:35

- A tag in a remote ControlView database. The format for specifying this location is

`nodename::tag`

where `nodename` is a remote ControlView node defined in the Node Configuration window, and `tag` is a tag name in the remote database.

A valid example might be

`cv_2::tank.level`

`<value>` is an amount to add or subtract from the current programmable controller value, as follows:

- A numeric value with a sign indicating add (+) or subtract (-). If no sign is included, ControlView assumes a +.

Unlike SET, if RAMP calculates a value that is outside of the tag's Minimum and Maximum range, the write will not fail. Instead, RAMP will write the highest or lowest allowable value to the programmable controller.

Important: When accessing a remote database directly, (i.e., without a point defined in the local database), ControlView uses the tagname in the remote database as if it were a programmable controller address. Because of this, only numeric values can be used when writing directly to points in a remote node's database. Values as a percentage of the total Minimum/Maximum range will not work, since, as in a programmable controller address, Minimum/Maximum and ON/OFF labels are not recognized.

Examples: The RAMP Command on a LAN

RAMP cv_2::tank.level -10

if the value of `tank.level` is 50, the command will write the value "40" to the programmable controller.

RAMP cv_2::tank.level +500

if the value of `tank.level` is 100, Minimum = -100 and Maximum = 900, the command would write the value "600" to the programmable controller.

RAMP cv_2::tank.level +175

if `tank.level` is 900, Minimum = 0 and Maximum = 1000, the command will write 1000 to the programmable controller, as this is the highest allowable value.

REMCOPY

REMCOPY [/B]<nodename::>[drive:][path]<filename>[.ext] [drive:][path][filename][.ext]

REMCOPY [/B][drive:][path]<filename>[.ext] <nodename::>[drive:][path][filename][.ext]

/B performs the file transfer in the background, without opening the file list window.

Important: When this parameter is included, the File Transfer task cannot be aborted.

nodename is the ControlView node to copy the file from or to

drive is the drive on which the source or destination is located

path is the path name of the file to be copied

filename is the name of the file to be copied

.ext is the file name extension

Important: A nodename must be included in either source or destination specification, even for a local copy. A nodename cannot be included in both file specifications; this would amount to the local node trying to copy a file from one remote node to another remote node, which is not supported.

You can use the following wild card characters with the REMCOPY command:

Table A.A
Wild Card Characters

?	matches any single character. Does <i>not</i> match a null character.
*	matches any group of characters in a file name or extension
\	in source, copies entire directory; at the end of destination, defines a directory

SET

SET [*options*] <location> <value>

Writes a value to a tag.

[*options*] are:

- /s Silence all error messages (such as "Write Failure").
- /v Perform read-back verify on the write.

Normally, the system waits for an ACK (acknowledge) from the local communication module (e.g., 1770-KF2), to determine if a write has passed. This is sufficient verification of writes in most cases.

The /v option provides an extra level of security by performing a read immediately after the write to verify that the value was actually altered in the programmable controller.

This option is useful if the communications network is in poor condition, or susceptible to noise interference. Use it only if you are certain that no other device will be altering the programmable controller location being written to.

<location> is one of the following:

- A valid tag name, such as `tank.level`
- A node name and physical address. The format for specifying this location is:

`$nodename::address`

where `nodename` is defined in the Node Configuration window, and `address` is the physical programmable controller address syntax. The dollar sign (\$) distinguishes a programmable controller node name on the communication network from a ControlView node name on the LAN. Here is a valid address:

`$fred::N7:35`

- A tag in a remote ControlView database. The format for specifying this location is
`nodename::tag`
where `nodename` is a remote ControlView node defined in the Node Configuration window, (not a programmable controller node), and `tag` is a tag name on that node. A valid example might be

`cv_2::tank.level`

<value> is one of the following:

For analog tags: A numeric value within the range specified by the tag's Minimum and Maximum values in the tag database.

If the value specified is outside the Minimum/Maximum range, the write will not be performed, and an error message will be displayed.

For digital tags: the numeric value zero (0) or one (1).

Important: When accessing a remote database directly, (that is, without a point defined in the local database), ControlView uses the tagname in the remote database as if it were a programmable controller address. Because of this, only numeric values can be used when writing directly to points in a remote node's database. Values as a percentage of the total Minimum/Maximum range, for analog tags, and use of the ON/OFF labels, for digital tags, will not work, since, as in a programmable controller address, Minimum/Maximum and ON/OFF labels are not recognized.

Example: The SET Command on a LAN

For an analog tag:

SET cv_2::tank.level 450

writes the value 450 to the programmable controller.

For a digital tag:

SET cv2::valve.23 1

writes a "1" to the programmable controller to turn the valve ON.

STATUS

STATUS [*options*] <location> [*location*]

Displays tag information.

[*options*] are:

/Xnnn Sets the X coordinate of the STATUS window to *nnn* pixels. Range is 0 to 640.

/Ynnn Sets the Y coordinate of the STATUS window to *nnn* pixels. Range is 0 to 310.

<location> is one of the following:

- A valid tag name, such as `loop3.cv`
- A valid tag name with wild card substitution, where valid wild cards are *, ?, and +:
- A node name and physical address. The format for specifying this location is:

`$nodename::address`

where *nodename* is defined in the Node Configuration window, and *address* is the physical programmable controller address syntax. The dollar sign (\$) is necessary to distinguish a programmable controller node name on the communication network from a ControlView node name on the LAN. Here's an example of a valid programmable controller address:

`$fred::N7:35`

- A tag in a remote ControlView database. The format for specifying this location is

`nodename::tag`

where *nodename* is a remote ControlView node defined in the Node Configuration window, (not a programmable controller node), and *tag* is a tag name on that node. A valid example might be

`cv_2::tank.level1`

If a single tag name is given for location, database information (such as description, node, and address) will be displayed, along with the tag name and its current value.

If multiple tags are specified, a list of tag names and values will be displayed. Up to seven (7) tags can be seen in the window; scroll up or down to see the rest. A maximum of 100 values may be monitored in this list.

Multiple *locations* can be given. All locations specified will be combined into one list.

Example: The STATUS Command on a LAN

`STATUS cv_2::tank.level.cv`
displays information on the point tank.level.cv on remote ControlView node cv_2

For more detailed examples, see the *ControlView Core User Manual*, Appendix A, *ControlView Commands*.

Technical Notes

This appendix is for users of Networking who want detailed, technical information on the installation, operation and troubleshooting of the peer-to-peer Networking system. To avoid duplication of information, whenever possible the reader is referred to the appropriate documentation to obtain further details on a particular topic.

This appendix is written for a technical audience. A general familiarity with Local Area Networks, Data Communications and Novell Netware is essential.

The information contained in this appendix is intended as a supplemental guide. Although every attempt has been made to verify technical accuracy, Allen-Bradley cannot assume any liability with respect to use of information, equipment or software described in this document.

Principal Uses of Networking

Tag Data Concentration (Using the LAN as a Backbone)

In a data concentration configuration, the LAN is used as a high-speed backbone. Data from several *Database Servers* is collected and processed (using DLG, RPT etc.) at a single ControlView workstation with scanner task(s) running. This workstation is the *Database Client*. Once the data resides on this concentrator node, it can be used to provide a high-level view of the process or could be exported "upwards" to a network printer/file server for further use by other systems.

This configuration can also be used to allow a *ControlView Node* to collect data from several non-connected remote highways.

Tag Data Distribution

In a data distribution configuration, the LAN is used to distribute real-time tag information from **one** ControlView node acting as a database server to multiple database clients. This allows any screens, trends, etc. that require PLC tag information, to be displayed on workstations that are not connected to a data highway. In addition, highway efficiency is improved by eliminating redundant scanning of the PLC. The database server scans a PLC point once regardless of how many clients are requesting that particular PLC value.

File Transfer

The File transfer utility can be used to transfer single files to or from any ControlView Node. This is useful for transferring log-files, reports, C-Toolkit tasks, macros and other configuration files between any two nodes and/or to a file server.

Getting ControlView Nodes to Communicate

Several steps must be followed before successful peer-to-peer communication can take place.

1. Plan, install and test the physical media being used. Follow the manufacturer's recommendations closely. Incorrect installation of the physical media can result in problems that are very difficult to diagnose. Typical things to look for are layout, (i.e bus vs. dropline, etc.) proper routing, adequate grounding, workstation connections, segment lengths, number of drops and termination.

Where electrical noise may be a problem, (i.e., most factory environments) an experienced data communications engineer should be consulted on cabling requirements and proper cabling procedures. **Thin-wire Ethernet should NOT be used in noisy environments.** Thicker coaxial cable systems provide superior noise immunity.

2. Configure and install a network adaptor in each machine being used as a ControlView node.

Important: Do not use the adaptor's default switch settings. Consult the section "Recommended Adaptor Settings" below for proper configuration parameters before setting up your network adaptors.

3. Create a workstation shell (IPX) that matches the hardware configuration selected in step 2. For Netware v 2.15, the utility to use is SHGEN; for NetWare v3.11, the utility is WSGEN. Refer to your Novell documentation for details.
4. Many adaptor manufacturers do not provide drivers for every hardware configuration. This is the case for the 6628-A5 AT Ethernet adaptor. With the 6628-A5 use the DOS utility NWPATCH1 (Netware v2.15) or JUMPERS (Netware v3.11), to modify the IPX file to your specifications.
5. Install the ControlView Networking software.
6. Load all necessary network drivers including ControlView's network interface software (RTXSHELL) **exactly** as outlined earlier in this manual.

7. Test your configuration for basic communication in ControlView. This can be done by using the "NETDIAG" command to see if "Other" nodes exist or by attempting a simple remote file transfer. (See the Networking manual for details.)
8. If communication is not successful in ControlView, verify that NETBIOS communication is possible in DOS. One way to do this is to use the NETBIOS test utility, NBTEST.EXE supplied on the ControlView utilities disk.

NBTEST checks for basic communication between two nodes by sending, then receiving a short NETBIOS message between the nodes in question. (Refer to the documentation supplied with the NBTEST utility for information on its use.)

Important: If the NBTEST fails, NETBIOS communication is not possible in DOS and hardware problems and/or configuration conflicts probably exist. This type of problem should be solved by a data communications or Novell engineer. **ControlView Nodes will NOT communicate without at least first establishing communications in DOS.**

Adaptor Settings

Table B.A
Recommended Adaptor Settings

	6628-A5 (Ethernet)			6625-C2S (LAN/PC)			IBM Token Ring		
AT Computer	IRQ	I/O Base	RAM Address	IRQ	I/O Base	RAM Address	IRQ	I/O Base	RAM Address
AT Clone*	5**	220	D000***	5	1E0	D000	7****	0A20	D000
T60	5	220	D000	5	1E0	D000	2*****	0A20	D000
Compaq 20e	5	220	D000	5	1E0	D000	2*****	0A20	C800
	6628-A5 (Ethernet)			6625-C2S (LAN/PC)			IBM Token Ring		
PS/2 Computer Micro channel	IRQ	I/O Base	RAM Address	IRQ	I/O Base	RAM Address	IRQ	I/O Base	RAM Address
6124	10	220	D000	10	14E0	C400	11	A20	CC00

*For reference only. AT-Clones are not officially supported computers.

** Use only if your computer is **not** equipped with LPT2 (2nd parallel port).

*** Use only if your computer does not have cards using this address.

**** Use IRQ7 only if you are not using LPT1.

***** Use IRQ2 only if you do not have an EGA card.

■ IRQ2

IRQ2 can be used if your computer is equipped with an IBM compatible VGA card. Some VGA and *all* EGA cards use IRQ2 and hence will conflict. Only use IRQ2 as a last resort

Important: If IRQ2 is to be used with the 6628-A5 or 6625-C2S cards (as well as many others), RTXHELL MUST BE LOADED WITH THE “-I9” PARAMETER. Failure to do this will result in a complete failure of peer communications.

Most network hardware manufacturers actually hook the software interrupt vector 71 when IRQ2 is selected. This vector is reserved for IRQ9 — what DOS calls the IRQ2 re-direct vector. To determine what vector your adaptor uses, load IPX, then run a utility such as Quarterdeck’s Manifest (or any memory diagnostic utility) and view “first meg / interrupts”. If Manifest reveals that IPX (or a lower level packet driver) hooks vector 71, you will have to use the -I9 parameter with RTXHELL. If Manifest shows that vector 0A is being hooked, then your adaptor is hooking IRQ2 as it should.

■ IRQ3

Do not use IRQ3 with the Networking option.

Adaptor Setting and Hardware Limitations

Verify that your network adaptor’s settings do not conflict with other adaptors already installed. A conflict may exist with devices on the motherboard, such as SCSI drive controllers, memory boards etc. Check the interrupt levels, I/O Base and RAM addresses that the hardware uses.

In addition to the hardware conflicts discussed above, the following known hardware limitations exist on the supported platforms.

Table B.B
I/O Port Limitations

Port Address	Used By
0220h	Compaq 386/20e
0280h	ControlView’s Serial/Parallel Driver
02A0h	T60 Hard Drive
0300h	T60-486
0340-035Eh	ControlView Memory
0390h	"
0392h	"
0394h	"

RAM Buffer Address Limitations

The T60 workstation only allows hardware devices to be installed in the “D” page of RAM.

Error Conditions

There are three general categories of errors that are detected by the Networking software; those that are detected at the Network Service level or lower, those that are detected at the application level only and those that are detected by both levels. Once an error is detected, it will either be reported in an error window, to the activity log, or by flashing the Netstatus indicator reverse video black-on-red. (Or a combination of all three.) As a general rule, **if your network is experiencing problems, view the activity log to obtain a detailed list of the errors that are occurring.**

Network Service Errors

When the Network Services detect an error, they flash the Netstatus indicator red, send an internal message to the client or server task involved and then log the nature of the error to the activity log. The Network Services rarely produce error windows.

When an application task receives an error message from a Network Service it may choose to report the error. In many cases, this will result in two (or more) error messages that are logged in response to a single error condition—one by the Network Service being used, and one by the task using the service.

The Network Services detect and report the types of conditions listed below.

- not being able to open a channel to a given node. Typically a result of:
 - network hardware/software problems
 - network time-outs
 - remote node crashes or is powered down
- being forced to close channels and/or associations prematurely.
- not being able to load a requested service. (Server does not exist or is not enabled.)
- reaching the association limit.

- reaching the channel limit.
- reaching other resource limits. (e.g., lack of memory, buffers, etc.)
- encountering internal configuration problems.
- encountering protocol errors.
- encountering intermittent NETBIOS send/receive errors.

ControlView's Network Services do not explicitly report network timeouts. In the event that the LAN goes down, Novell's IPX software will wait a preset period (usually 30 to 60 seconds) before it times out and retries. All ControlView network activity will be suspended until the first timeout expires. If IPX's retries are unsuccessful, the Network Services will log the error, close the channel and signal the application that was using it. The application task will then be responsible for deciding if it wishes to retry the transaction. After the first timeout occurs, all subsequent errors will be logged at the timeout rate.

If a network timeout occurs when a given task is waiting for a network transaction to complete, it must wait until each of IPX's retries timeout before it is signalled (by the Network Services) that its transaction failed. As a result, ControlView will run slowly while timeouts are occurring.

Remote Database Access Errors

All Database Access errors are reported by the database scanner (client). When the scanner detects an error it will flash the Netstatus indicator red, set the communication error bit on the tags in error, and log a message outlining the problem to the activity log. No error windows will be displayed.

Remote File Transfer Errors

The file transfer utility (REMCOPY) displays all of its errors in error windows. The utility is not designed to retry connecting to a remote node if the connection is lost due to network errors; it will simply report the condition with an error message.

REMCOPY detects and reports well over one hundred error conditions. Most of these errors are DOS related (e.g., path/file does not exist, etc.) and as such are self-explanatory.

Network Management Errors

The Network management applications (NETCONFIG, NETDIAG) display all of their errors in error windows. These applications will not retry if the connection to a given node is lost, but will notify the operator.

Errors detected and reported by these applications include: "Specified node not available".

Services/Functionality NOT Available with Networking

- "Hop" Addressing — Network tags cannot point to tags that are, themselves, network tags. When a network tag is defined, it must point either to a tag that is a PLC or local tag in the remote database. The ability to point to other network tags is referred to as "Hop" addressing and is not supported in this release.
- File Sharing — Executable ControlView code/files CANNOT be used by more than one machine. Databases, screens etc. cannot be stored on a file server and be used by several workstations simultaneously. Each workstation must have its own database, configuration files and executables.
- Terminal Emulation — Workstations/Hosts cannot be operated from within a "Terminal Emulation" window.
- Remote Command Processing — Commands cannot be executed on a remote node from a local node (that is, processing cannot be truly distributed and controlled from one location).
- Global Alarm Management — If a point goes into alarm and is registered as an alarm on several LAN nodes, each node will have to acknowledge its own alarms separately. The ability to control alarms on multiple nodes simultaneously is referred to as Global Alarm Management. This functionality is NOT provided.
- NETBIOS and LAN Shells — The NOVELL files, IPX and NETBIOS that are required to use the Networking option are not included. These files must be generated using NOVELL Netware.
- Remote Host Connectivity — Direct database access from a remote host (e.g. from VMS, UNIX or other systems) is not supported. However, access to these machines as file servers can be achieved using NOVELL Netware without the Networking option installed.

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WORLD HEADQUARTERS

Allen-Bradley
1201 South Second Street
Milwaukee, WI 53204 USA
Tel: (1) 414 382-2000
Telex: 43 11 016
FAX: (1) 414 382-4444

EUROPE/MIDDLE EAST/AFRICA HEADQUARTERS

Allen-Bradley Europe B.V.
Amsterdamseweg 15
1422 AC Uithoorn
The Netherlands
Tel: (31) 2975/43500
Telex: (844) 18042
FAX: (31) 2975/60222

ASIA/PACIFIC HEADQUARTERS

Allen-Bradley (Hong Kong)
Limited
Room 1006, Block B, Sea
View Estate
28 Watson Road
Hong Kong
Tel: (852) 887-4788
Telex: (780) 64347
FAX: (852) 510-9436

CANADA HEADQUARTERS

Allen-Bradley Canada
Limited
135 Dundas Street
Cambridge, Ontario N1R 5X1
Canada
Tel: (1) 519 623-1810
FAX: (1) 519 623-8930

LATIN AMERICA HEADQUARTERS

Allen-Bradley
1201 South Second Street
Milwaukee, WI 53204 USA
Tel: (1) 414 382-2000
Telex: 43 11 016
FAX: (1) 414 382-2400